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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,602	12/05/2003	Tsuyoshi Tanaka	GOTO.0007	7490

38327 7590 11/02/2005

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EXAMINER	
LEE, CHUN KUAN	
ART UNIT	**PAPER NUMBER**
2181	

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/727,602	TANAKA ET AL.	
	Examiner	Art Unit	
	Chun-Kuan (Mike) Lee	2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 10/727,602.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/05/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 2, 5, 6, 10-12 and 17 are objected to because of the following informalities:

In claim 2, line 7, "said virtual machine" should be changed to – said selected virtual machine --. Correction is required.

In claim 5, lines 14-15, "state of connection" should be changed to – state of logical connection --. Correction is required.

In claim 6, line 11, "PCI connection interrupting means" should be changed to – PCI connection allocation means --. Correction is required.

In claim 10, lines 4-6, "an interrupt signal" should be changed to – the interrupt signal – and "said logical connection" should be changed to – said state of logical connection --. Correction is required.

In claim 11, lines 2-3, "an interrupt signal" should be changed to – the interrupt signal – and "said allocating mean" should be change to – said peripheral allocating mea --. Correction is required.

In claim 12, lines 5-7, "said second physical partitioned computer" should be changed to – the second physical partitioned computer –, "said state of logical connection" should be changed to – the state of logical connection -- and "said first physical partitioned computer" should be changed to – the first physical partitioned computer –. Correction is required.

In claim 17, line 5, "a state of logical connection" should be changed to – the state of logical connection –. Correction is required.

Claim 4 is objected to because it is dependent from the objected to dependent claim 2.

Claims 7-8 are objected to because they are dependents from the objected to independent claim 5 and dependent claim 6.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 3-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

2. Claims 3 and 4 recites the limitation "said virtual machine" in claim 3, line 4-5 and claim 4, line 2. There is insufficient antecedent basis for this limitation in the claim.

3. As per claims 3-4, it appears unclear which "virtual machine" the applicant is referring to. Examiner will assume that "said virtual machine" as "the computer" which "said virtual machine" resides in.

Claim Rejections - 35 USC § 102

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3, 5, 7, 13, 15 and 16-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Stiffler et al. (US Patent 6,622,263).

5. As per claim 1, Stiffler teaches a computer system method comprising:

a plurality of physical partitioned computers formed by partitioning a computer (Ref # 601 and 603 in Figure 6, where "physical partitioned computers" is read on "virtual machines" and "partitioning" is read on "control program"); and

an I/O device connected to a peripheral bus of said computer and shared among said plurality of physical partitioned computers (Ref # 616 in Figure 6 and column 9 line 52 to column 10, line 10, where "peripheral bus" is read on "PCI (peripheral component interconnect) bus"),

wherein said system further includes:

a dual-port disposed in said I/O device and connected to said peripheral bus (Figure 6 and column 9 line 52 to column 10, line 10, where "dual-port" is read on "single port");

peripheral connection allocation means for setting a state of logical connection between secondary computer and said dual-port (Figure 9 and column 10, lines 20-64, where "secondary computer" is read on "selected one of said plurality of virtual machines"); and

I/O device switching means for updating said state of logical connection set by said peripheral connection allocating means according to a takeover procedure by the secondary computer (Figure 9 and column 10, lines 20-64, where "takeover procedure" is read on "control signal" and "secondary computer" is read on "selected virtual machine"),

wherein said secondary computer changes its state of logical connection to said I/O device according to the setting by said peripheral connection allocating means (Figure 9 and column 10, lines 20-64).

6. As per claim 3, Stiffler teaches the computer system method comprising wherein said secondary computer includes error detecting means for detecting error occurrence in primary computer and when such an error is detected, the computer implements the takeover procedure for said I/O device switching means (Figure 9 and column 10, lines 20-64, where "primary computers" is read on "another virtual machine", "computer" is read on "said virtual machine" and "takeover procedure" is read on "predetermined control signal").

7. As per claim 5, Stiffler teaches a computer system method comprising:

a plurality of physical partitioned computers formed by partitioning a computer physically (Ref # 601 and 603 in Figure 6); and

an I/O device connected to a peripheral bus of said computer and shared among said plurality of physical partitioned computers (Ref # 616 in Figure 6 and column 9 line 52 to column 10, line 10),

wherein said system further includes:

a dual-port disposed in said I/O device and connected to said peripheral bus (Figure 6 and column 9 line 52 to column 10, line 10);

a peripheral connection allocation means for setting a state of logical connection between the secondary computer and said dual-port (Figure 9 and column 10, lines 20-64, where "secondary computer" is read on "selected one of said plurality of physically partitioned computers"); and

I/O device switching means for updating said state of logical connection set by said peripheral connection allocating means according to a takeover procedure implemented by the secondary computer (Figure 9 and column 10, lines 20-64, where "takeover procedure" is read on "control signal" and "secondary computer" is read on "selected physically partitioned computers"),

wherein said secondary computer changes its state of logical connection to said I/O device according to the setting by said peripheral connection allocating means (Figure 9 and column 10, lines 20-64).

8. As per claim 7, Stiffler teaches the computer system method comprising wherein the said secondary computer includes error detecting means for detecting error occurrence in the primary computer and implements a takeover procedure for said I/O

device switching means when detecting such an error (Figure 9 and column 10, lines 20-64, where "primary computers" is read on "each of said plurality of physical partitioned computers" and "takeover procedure" is read on "predetermined control signal).

9. As per claim 13, Stiffler teaches a computer system method for sharing an I/O device connected to a peripheral bus of a computer among a plurality of physical partitioned computers formed by partitioning a computer physically (Figure 6, where "physical partitioned computers" is read on "virtual machines" and "partitioning" is read on "control program"),

said method including:

a step of enabling said I/O device to set a state of logical connection between the secondary computer and a dual-port of said I/O device connected to said peripheral bus through said dual-port (Figure 6; Figure 9 and column 10, lines 20-64, where "secondary computer" is read on "selected one of said plurality of virtual machine"); and

a step of changing the state of logical connection between said dual-port and said secondary computer according to a takeover procedure implemented by the secondary computer (Figure 6; Figure 9 and column 10, lines 20-64, where "secondary computer" and "selected virtual machine" and "takeover procedure" is read on "control signal").

10. As per claim 15, Stiffler teaches the computer system method for sharing an I/O device further comprising, wherein said step of changing the state of logical connection, when detecting error occurrence in the primary computer, updates a list of pages for setting said state of logical connection between said dual-port and secondary computer, lets said error-detected primary computer be taken off-line and allow takeover by secondary computer (column 10, lines 20-64 and column 11, line 51 to column 12, line 17; where "primary computer" is read on "any of said plurality of virtual machines" and "virtual machine", "secondary computer" is read on "each virtual machine" and "another virtual machine", "list of pages" is read on "allocation table", "taken off-line" is read on "stand by" and "allow takeover" is read on "activate").

11. As per claim 16, Stiffler teaches a computer system method for sharing an I/O device connected to a peripheral bus of a computer among a plurality of physical partitioned computers formed by partitioning said computer physically (Figure 6),

wherein said method includes:

a step of enabling said I/O device connected to said peripheral bus through its dual-port to set a state of logical connection between secondary computer and said dual-port (Figure 6; Figure 9 and column 10, lines 20-49, where "secondary computer" is read on "selected one of said plurality of physical partitioned computers"); and

a step of changing the state of logical connection to said dual-port according to a takeover procedure implemented by the secondary computer (Figure 6; Figure 9 and column 10, lines 20-49, where "takeover procedure" is read on "control signal").

12. As per claim 17, Stiffler teaches the computer system method for sharing an I/O device further comprising, wherein said step of changing the state of logical connection, when detecting error occurrence in the primary computer, updates a list of pages for setting the state of logical connection between said dual-port and secondary computer, lets said error-detected primary computer be taken off-line and allow takeover by secondary computer (Figure 6; Figure 9; column 10, lines 20-64 and column 11, line 51 to column 12, line 17, where "primary computer" is read on "any of said plurality of physical partitioned computers" and "physical partitioned computer", "list of pages" is read on "allocation table", "secondary computer" is read on "each physical partitioned computer" and "another physical partitioned computer", "taken off-line" is read on "stand by" and "allow takeover" is read on "activate").

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 2, 4, 6, 8, 9-12, 14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stiffler et al. (US Patent 6,622,263) as applied to claims 1, 3, 5, 7, 13, 15 and 16-17 above, and further in view of the "Computer Input/Output".

14. As per claim 2, Stiffler teaches the computer system method comprising wherein said I/O device switching means for updating the state of logical connection set by said peripheral connection allocating means according to a takeover procedure by the secondary computer (Figure 9 and column 10, lines 20-64, where "peripheral connection" is read on "PCI (peripheral component interconnection) connection", "takeover procedure" is read on "control signal" and "secondary computer" is read on "selected virtual machine"), and

wherein the secondary computer changes its state from of logical connection to said I/O device according to the setting by the peripheral connection allocation means (Figure 9 and column 10, lines 20-46).

Stiffler does not teaches wherein said I/O device switching means includes interrupting means for updating the setting by said peripheral connection allocating means and generating an interruption to notify said selected virtual machine of a change of said state of logical connection to said I/O device, and

wherein said virtual machine, when receiving said interruption, changes its state of logical connection to said I/O device according to the setting by said PCI connection allocating means.

The "Computer Input/Output" teaches the Interrupt Driven I/O (Section 4), wherein the sequence of events is as follows:

the I/O module interrupts the CPU;

the CPU finishes executing the current instruction;

the CPU acknowledges the interrupt;

the CPU saves its current state; and

the CPU jumps to a sequence of instructions which will handle the interrupt (Section 4, where "I/O module" is read on I/O device" and "CPU" is read on "computer").

Therefore, it would have been obvious to one of ordinary skill in this art, at the time of invention was made to modified Stiffler to include interrupt means for updating the setting by said peripheral connection allocating means and generating an interruption to notify the secondary computer of a change of said state of logical connection to said I/O device, and

wherein the secondary computer, when receiving said interruption, changes its state of logical connection to said I/O device according to the setting by said peripheral connection allocating means.

It would have been obvious to one of ordinary skill in this art, at the time of invention was made to have modified Stiffler by the teaching of The "Computer Input/Output", because not only is the use of interrupts well know in the art, but also by including interrupt means for updating the setting by said peripheral connection allocating means and generating an interruption to notify the secondary computer of a change of said state of logical connection to said I/O device, and

wherein the secondary computer, when receiving said interruption, changes its state of logical connection to said I/O device according to the setting by said peripheral connection allocating means, would removes the need for the CPU to continually poll input devices to see if it must read any data.

15. As per claim 4, Stiffler as modified teaches that the system method comprising wherein the computer includes primary and secondary computer,

wherein said secondary computer, when an error is detected in said primary computer, implements a takeover procedure for said I/O device switching means and connects the dual-port of said I/O device to said secondary computer, and wherein the secondary computer is activated and the primary computer is taken off-line (Stiffler, Figure 6, Figure 9 and column 10, lines 20-64, where "first virtual machine" is read on "primary computer", "second virtual machine" is read on "secondary computer", "takeover procedure" is read on "predetermined control signal" and "taken off-line" is read on "stand by").

16. As per claim 6, Stiffler as modified teaches that the system method comprising wherein said I/O device switching means includes interrupting means for updating the setting by said peripheral connection allocating means and generating an interruption to notify the secondary computer of a change of said state of logical connection to said I/O device, and

wherein said secondary computer, when receiving said interruption, changes its state of logical connection to said I/O device according to said setting by said peripheral connection allocation means (Stiffler, Figure 9 and column 10, lines 20-64 and "Computer Input/Output", section 4, where "secondary computer" is read on "selected physical partitioned computer").

17. As per claim 8, Stiffler as modified teaches that the system method comprising wherein primary and secondary computers are included in said plurality of physical partitioned computers,

wherein said error detecting means, when detecting an error in said primary computer, implements a takeover procedure for said I/O device switching means and connects said dual-port of said I/O device to said secondary computer, and

wherein said computer activates the secondary computer and lets said primary computer be taken off-line (Stiffler, Figure 6, Figure 9 and column 10, lines 20-64, where "primary computer" is read on "first physical partitioned computers" and "first virtual machine", "secondary computer" is read on "second physical partitioned computers" and "second virtual machine", "takeover procedure" is read on "predetermined control signal" and "taken off-line" is read on "stand by").

18. As per claim 9, Stiffler as modified teaches a system method with an I/O device connected to a peripheral bus of a computer, comprising:

a dual-port connected to said peripheral bus; and

signal generating means for generating an interruption signal used to change the state of logical connection of said dual-port according to a takeover procedure implemented by said computer,

wherein said computer, when receiving said interruption signal, changes its state of logical connection to said dual-port (Stiffler, Figure 6 and column 10, lines 20-64 and "Computer Input/Output", section 4).

19. As per claim 10, Stiffler as modified teaches a system method with a I/O device connected to a peripheral bus of a computer, comprising:

wherein said computer includes primary and secondary computer formed therein,

wherein said signal generating means sends the interruption signal to said secondary computer to change said state of logical connection of said dual-port to said primary computer according to a fault occurred in the primary computer (Stiffler, Figure 6, Figure 9 and column 10, lines 20-64 and "Computer Input/Output", section 4).

20. As per claim 11, Stiffler as modified teaches a system method with a I/O device connected to a peripheral bus of a computer, comprising wherein said signal generating means generates the interruption signal and updates said peripheral allocating means for setting said state of logical connection of said dual-port (Stiffler, Figure 6, Figure 9 and column 10, lines 20-64 and "Computer Input/Output", section 4).

21. As per claim 12, Stiffler as modified teaches a system method with an I/O device connected to a plurality of physical partitioned computers through a peripheral bus, comprising:

a dual-port connected to said peripheral bus; and

signal generating means for sending an interruption signal to the secondary computer to change the state of logical connection of said dual-port to the primary computer according to a fault occurred in the primary computer included in said plurality

of physical partitioned computers (Stiffler, Figure 6, Figure 9 and column 10, lines 20-64 and "Computer Input/Output", section 4).

22. As per claim 14, Stiffler as modified teaches the computer system method for sharing an I/O device comprising:

wherein said step of changing the state of logical connection includes:

a step of changing said state of logical connection between said dual-port and said secondary computer and generating an interruption to notify said secondary computer of a change of the state of logical connection to said I/O device; and

a step of enabling said secondary computer that receives said interruption to change the state of logical connection to said I/O device according to said setting of said state of logical connection (Stiffler, Figure 6, Figure 9 and column 10, lines 20-64 and "Computer Input/Output", section 4, where "secondary computer" is read on "selected virtual machine").

23. As per claim 18, Stiffler as modified teaches the computer system method for sharing an I/O device connected to a peripheral bus of a computer among a plurality of physical partitioned computers comprising:

wherein said method includes:

a step of enabling said I/O device connected to said peripheral bus through its dual-port to generate an interruption signal used to change the state of logical

connection of said dual-port according to a takeover procedure implemented by the secondary computer; and

a step of changing the state of logical connection between said dual-port and the secondary computer according to said received interruption signal(Stiffler, Figure 6; Figure 9 and column 10, lines 20-64 and "Computer Input/Output", section 4, where "secondary computer" is read on "any selected one of said plurality virtual machine" and "selected virtual machine").

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun-Kuan (Mike) Lee whose telephone number is (571) 272-0671 and email is chun-kuan.lee@uspto.gov. The examiner can normally be reached between 9AM to 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Popovici Dov can be reached on (571)272-4083. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature of relating to the status of this application should be directed to the Group receptionist whose telephone number is (571) 272-2100.

Mailed responses to this action should be sent to:

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